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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,199	04/25/2001	Winfried Maier	225/49630	3649

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EXAMINER

LE, DAVID D

ART UNIT	PAPER NUMBER
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3681

DATE MAILED: 07/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/763,199

Applicant(s)

MAIER, WINFRIED

Examiner

David D. Le

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-47 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Document

1. The following documents have been received and filed as part of the patent application:

- Declaration and Power of Attorney, received on 04/25/01
- Information Disclosure Statement, received on 04/25/01
- Priority Document, received on 04/25/01
- Preliminary Amendment, received on 04/25/01

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 12-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 34, and 44:

- Claim 12 recites the limitation "a shift transmission, with at least one outer and one inner synchro ring and, if appropriate, at least one intermediate ring." It is unclear whether the claimed shift transmission includes an intermediate ring.

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- Claim 12 further recites the limitation “at least one of the synchro rings and/or the intermediate ring consisting of a metallic basic material.” It is unclear whether the intermediate ring is consisting of a metallic basic material.
- Claim 12 even further recites the limitation “wherein at least one of the synchro rings and the intermediate ring consist of the metallic basic material which is nitride-hardened in such a way that, by process parameters being set during nitride-hardening, one of a non-metallic Y'-connecting layer and a non-metallic ϵ -connecting layer is formed on a conical surface of at least one of the synchro rings and the intermediate ring.” It is unclear whether the synchro rings and the intermediate ring consist of only metallic basic material or both metallic basic material and non-metallic Y'-connecting layer and ϵ -connecting layer.
- Claims 12, 34, and 44 recite the limitations “a non-metallic Y'-connecting layer and a non-metallic ϵ -connecting layer.” The claims fail to distinctly point out whether both Y'-connecting layer and ϵ -connecting layer are formed on the same ring or Y'-connecting layer is on one ring and ϵ -connecting layer is on another ring.

Claims 14, 23, 36, and 46:

Claims 14, 23, 36, and 46 recite the limitation “Fe_{2.3}N.” The examiner believes the chemical composition Fe_{2.3}N is a typing error. For the purpose of examining the merit of the claims, the examiner assumes the chemical composition Fe_{2.3}N as either Fe₂N or Fe₃N.

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Claims 19, 32, 33, and 41:

Claims 19, 32, 33, and 41 recite the limitation "the nitriding depth is 200 to 800 μm " in the claim. There is insufficient antecedent basis for this limitation in the claim.

Claim 20:

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 20 recites the broad recitation "1 to 20 μm ", and the claim also recites "preferably approximately 10 μm ", which is the narrower statement of the range/limitation.

Claim 41:

Claim 41 is further indefinite because it recites the limitation “200 and 800 μg .”

For the purpose of examining the merit of the claim, the examiner assumes the above limitation as 200 and 800 μm .

Claims 46 and 47:

Claims 46 and 47 further define a synchronizing device assembly but they are dependent upon the method claim 44. It is unclear whether the applicant tries to claim the method or the apparatus. For the purpose of examining the merit of the mentioned claims, the examiner assumes those mentioned claims as method claims.

Claims 45-47:

Claims 45-47 provide for the use of a method of making synchronizing device assembly, but, since the claims do not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a method of making without any active, positive steps delimiting how this method of making is actually practiced.

Claims 45-47 are rejected under 35 U.S.C. 101 because the claimed recitation of a method, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 12-47 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 4,618,049 to Pflaum et al. in view of U. S. Patent No. 5,560,461 to Loeffler, and further in view of U. S. Patent No. 6,105,374 to Kamody.

Claims 12, 21-22, 34, and 44:

Pflaum (Fig. 2; column 4, lines 5-36 and column 7, line 12 – column 8, line 17) discloses a synchronizing device for a shift transmission comprising:

- an outer synchro ring (1);
- an inner synchro ring (4);
- the synchro rings, each having conical surfaces, via which they are connected at least indirectly to one another, and at least one of the synchro rings consisting of a metallic basic material, wherein at least one of the synchro rings consist of the metallic basic material which is nitride-hardened;

- wherein the inner synchro ring or the outer synchro ring is firmly connected to a gearwheel.

Pflaum lacks:

- an intermediate ring;
- wherein by process parameters being set during nitride-hardening, one of a non-metallic Y'-connecting layer and a non-metallic ϵ -connecting layer is formed on a conical surface of at least one of the synchro rings and the intermediate ring.

Loeffler (Fig. 1 and column 5, lines 9-59) discloses a multiple cone synchronizer for vehicle transmission comprising

- an outer ring (60);
- a center ring (70);
- an inner ring (80);
- wherein the center ring (70) is arranged between the inner synchro ring (80) and the outer synchro ring (60), the conical surfaces of the center ring having a friction layer.

Kamody (column 1, lines 45-59) discloses the process of nitriding metal containing materials,

- wherein by process parameters being set during nitride-hardening, one of a non-metallic Y'-connecting layer and a non-metallic ϵ -connecting layer is formed on a conical surface of at least one of the synchro rings and the intermediate ring;
- since the conical surfaces of the center ring (80) comprises a friction layer, it would be inherent that the Y'- or ϵ -connecting layer being applied to one synchro ring, and the friction layer being applied to the other synchro ring.

Claims 13-15, 23-25, 35-37, and 45-47:

Kamody (column 1, line 45 – column 2, line 8) discloses a process of nitriding metal containing materials, wherein

- a Y'-connecting layer is formed which consists of Fe_4N ;
- a ϵ -connecting layer is formed which consists of Fe_2N or Fe_3N ;
- at least one of the synchro rings and the intermediate ring is plasma-nitride-hardened.

Claims 16-18, 26-31, and 38-40:

Pflaum (column 3, line 40 – column 4, line 36) discloses a synchronizing device,

- wherein the metallic basic material of at least one of the synchro rings and the intermediate ring is a sintered material;
- wherein the metallic basic material of at least one of the synchro rings and the intermediate ring is a sinter-forged material;
- wherein the metallic basic material of at least one of the synchro rings and the intermediate ring is a hardenable steel;

Claims 20 and 42-43:

Pflaum (column 6, lines 48-66) discloses the thickness of the layer is advantageously from 2-50 μm , preferably between 5-15 μm .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Pflaum reference to include an intermediate ring in view of Loeffler to improve the synchronization capacity within a given volume. The synchro rings of Pflaum's synchronizing device are further modified by utilizing nitride-hardening process in view of Kamody's process of nitriding in order to substantially increase surface hardness of the synchro rings.

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6. Claims 19, 32-33, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pflaum in view of Loeffler and Kamody as applied to claims 12-14 and 34 above, and further in view of U. S. Patent No. 5,249,661 to Kawamura et al.

Claims 19, 32-33, and 41:

Pflaum, Loeffler, and Kamody references disclose all elements and limitations as applied to claims 12, 13, 14, and 34 above. Kawamura (column 2, lines 53-54) discloses the flame-coated film has a thickness of 70-200 μm .

It would have been obvious to one of ordinary skill in the art at the time the invention was made to even further modify Pflaum reference in view of Kawamura in order to achieve such desirable thickness of the flame-coated film.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Chana (U. S. Patent No. 4,445,602) teaches a synchronizer for a power transmission having a split cone ring and a split bearing ring rotatable with the synchronizer ring.

Kruse et al. (U. S. Patent No. 5,913,936) teaches a multispeed transmission including a range section having a plural cone synchronizer.

Parsons (U. S. Patent No. 5,638,930) teaches a strut-type synchronizer comprising three rings.

Frost (U. S. Patent No. 4,732,247) teaches an improved multi-cone strutless synchronizer having one or more cone rings concentrically disposed intermediate an outer blocker ring and an inner exterior cone surface of a ratio gear journal supported on a speed shaft.

Frost (U. S. Patent No. 4,901,835) teaches a shift inhibitor for a manual transmission synchronizer clutch comprising three rings.

Schwuger et al. (U. S. Patent No. 6,016,895) teaches a synchronizer device for a geared speed change transmission comprising a coupling body, a friction ring, and an indexing gear.

Gramberger et al. (U. S. Patent No. 4,917,743) teaches a method for manufacturing a friction ring having conical or cylindrical friction surface comprising a supporting ring and a sintered friction lining.

Nakashima et al. (U. S. Patent No. 5,288,683) teaches a wear-resistant copper alloys and synchronizer rings for automobiles comprising the same.

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Yamada et al. (U. S. Patent No. 5,888,269) teaches a case nitrided aluminum product, which is produced by contacting an aluminum product with a nitriding agent at a part of a surface thereof at least, and by nitriding the aluminum product at the surface with an ambient gas at a temperature of a melting point of the aluminum product or less while keeping the aforementioned contact.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Le whose telephone number is 703-305-3690. The examiner can normally be reached on Mon-Fri (0700-1530).


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Charles Marmor can be reached on 703-308-0830. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7687 for regular communications and 703-305-7687 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.



ddl

July 14, 2002


RODNEY H. BONCK
PRIMARY EXAMINER
ART UNIT 3681